

# STATUS AND MIGRATION CHARACTERISTICS OF BUNTINGS (*EMBERIZIDAE*) IN EILAT AND IN ISRAEL

REUVEN YOSEF

R. Yosef, International Birding & Research Center in Eilat, P.O. Box 774,  
Eilat 88000, Israel; e-mail: ryosef@eilatcity.co.il

**ABSTRACT:** In the study, an overview of migration of 13 bunting species (*Emberiza leucocephalos*, *E. citrinella*, *E. cia*, *E. striolata*, *E. cineracea*, *E. hortulana*, *E. caesia*, *E. rustica*, *E. pusilla*, *E. aureola*, *E. schoeniclus*, *E. bruniceps*, *E. melanocephala*) through Eilat, against the background on their status in Israel and the Middle East is presented.

**KEY WORDS:** buntings, migration, Israel, Eilat

## INTRODUCTION

The wintering areas of most buntings (*Emberiza* spp.) remain vague (Stolt 1977). On the breeding range, many of the species are declining and cause for concern (e.g. Tucker and Heath 1994, Lang 1996, Lentner 1996). Agriculture practices, habitat destruction and hunting are the major reasons suggested for the population declines and several are classified as a SPEC Category 2, whose status in Europe is vulnerable (cf. von Bülow 1990, 1996; Kutzenberger 1991; Meier-Peithmann 1992; Rademaker 1996; Tucker and Heath 1994; Kuźniak *et al.* 1997; Stolt 1997).

An electronic literature search proved that there is little information pertaining to the wintering grounds and the migratory part of the annual life cycle of buntings across most of its range. Information published, and that pertains to migrations, are in either local languages or hard to access publications (e.g. Stolt 1977; Ojanen

*et al.* 1994, 1996; Vaisanen 1994) or relate only to the northwestern flyways of the western Palearctic (e.g. Ojanen *et al.* 1994, 1996; Stolt 1996). Hence, here I present information collated at the only long-term ringing station in the Middle East – at Eilat, Israel.

## Material and methods

### Study area and period of study

Israel is the only land bridge for birds migrating south from Europe and Asia to Africa in autumn and north to their breeding grounds in spring (Shirihai *et al.* 2000). Eilat is an important site because it is located on the northern edge of the Saharan-Arabian desert belt and is critical for many migrant species because it is reached after a flight of almost 2000 km of continuous desert regions of the Sahel, Sahara and Sinai deserts (Safriel 1968). To the NNE there are still 650 km more of the Syrian Desert, and due East the vast Arabian desert. Hence many birds are enticed to land in the green areas that surround Eilat and to rest before (in autumn) or after (in spring) crossing the deserts (Morgan and Shirihai 1997).

Ringing by the International Birding & Research Center in Eilat (IBRCE) was initiated in 1984. However, owing to changes in agricultural practices and political pressures, the ringing location has changed in the area three times to date (Morgan and Shirihai 1997). Between the springs of the years 1984–1990 ringing was conducted in agricultural fields 3 km north of Eilat. Up to 1987 the major crop comprised mostly of alfalfa (*Medicago sativa*) and from 1987–1989 was changed to melons and other cash crops. This caused a reduction in the total number of birds netted. Between autumn 1990 to autumn 1995 the ringing station was relocated 1.5 km east of Eilat to a natural area of mixed saltmarsh vegetation, dominated by sea-blite (*Suaeda monoica*). In early 1996 the research area was plowed under for agricultural purposes. Hence, since spring 1996 the ringing program has been relocated 2 km north of Eilat in the boundaries of the “Bird Sanctuary” that is owned by the IBRCE.

Owing to changes in locations of the ringing station, a great variance of trapping between years and between seasons is evident. However, we have analyzed the data cumulatively assuming that the changes in local ringing efforts will not have affected the migratory patterns of the study species.

One characteristic common to all bunting species is that the migration is nocturnal and staging stops are diurnal making them easier to observe.

## Results and discussion

Presented here in taxonomic order are the results of the literature search and the ringing data from Eilat, 1984–2000, pertaining to each of the Bunting species known to occur in the Middle East in general and Israel in particular (e.g. Benson 1984, Goodman *et al.* 1989, Andrews 1995, Shirihai 1996). An overview of the data is also presented in a concise manner in Table 1.

Table 1. The status of buntings in the Middle East, in Israel and in Eilat

| Species                       | Middle East                    | Israel                                     | Eilat   |
|-------------------------------|--------------------------------|--|---|
| <i>Emberiza leucocephalos</i> | winter visitor                 | visitor high altitude Mediterranean        | accidental                                    |
| <i>E. citrinella</i>          | resident; partial migrant      | common winter visitor                      | accidental; very rare winterer                |
| <i>E. cia</i>                 | resident                       | common winter visitor; breeding Mt. Hermon | no records                                    |
| <i>E. striolata</i>           | breeding                       | common resident                            | scarce to uncommon resident                   |
| <i>E. cineracea</i>           | breeding and migration         | migration                                  | rare spring; accidental autumn                |
| <i>E. rustica</i>             | vagrant and migration          | migration                                  | very rare autumn migrant                      |
| <i>E. pusilla</i>             | vagrant; rare autumn migrant   | more frequently recorded                   | very rare autumn migrant                      |
| <i>E. aureola</i>             | vagrant                        | accidental, extremely rare migrant         | accidental; very rare in autumn               |
| <i>E. schoeniclus</i>         | resident and partially migrant | common migrant; winter visitor             | very rare to scarce, irregular winter visitor |
| <i>E. bruniceps</i>           | breeding summer visitor        | single observation                         | single observation                            |
| <i>E. melanocephala</i>       | breeding summer visitor        | scarce to quite common passage migrant     | uncommon-scarce spring and autumn             |
| <i>E. hortulana</i>           | breeding summer visitor        | breeding; abundant migrant                 | common migrant                                |
| <i>E. caesia</i>              | breeding summer visitor        | breeding and migrant                       | common migrant spring, rare-scarce autumn     |
| <i>E. pallasi</i>             | vagrant, migrant               |  |   |
| <i>E. chrysophrys</i>         | extremely rare autumn migrant  |  |   |
| <i>E. buchanani</i>           | summer visitor                 |  |   |
| <i>E. cirrus</i>              | winter                         |  |   |

### Pine Bunting (*Emberiza leucocephalos*)

In Middle East is a winter visitor to Iran and locally in northern and central Israel. It is considered a vagrant or a rare species in Turkey, Iraq, Jordan, Syria, Lebanon, Arabia and Cyprus.

In Israel, it is a visitor of high altitude Mediterranean climates. Found mostly on Mt. Hermon, eastern Upper Galilee and the Jerusalem hills that are chiefly between 600–1700 m a.s.l. To date, it is believed that the only subspecies to be found in Israel is the nominate subspecies.

In Eilat, it is considered accidental and there is only one substantiated record from November 1987. A hybrid between the Pine Bunting and the Yellowhammer (*E. citrinella*) was caught and ringed on 14 November 1984.

### Yellowhammer (*E. citrinella*)

In Middle East this species is a resident or partial migrant in northern and central Iran and NE Turkey. It is a winter visitor in Iran, Turkey, Israel and Cyprus.

In Israel this quite a common winter visitor in mountainous Mediterranean climates of northern and central Israel. The subspecies *erythrogenys* is considered to be the main form in winter. The nominate subspecies is a scarce winter visitor but tends to be at lower elevations. It is assumed that the planting of extensive deciduous fruit orchards and pine woods during the 1960s and the 1970s facilitated the ability of the species more extensively than was previously accepted.

In Eilat accidental or very rare winterer. A few records.

### Rock Bunting (*E. cia*)

In Middle East is mostly a resident species in Turkey, Iran, Syria, Lebanon and Israel. During winter it spreads to Iraq and Cyprus. Altitudinal migrations have been reported.

In Israel, the nominate subspecies is a fairly common winter visitor in mountainous Mediterranean climates of N and C Israel. Breeding has only been recorded in the NE corner on Mt. Hermon at 900–1800 m. In winter this residential population mixes with a much larger immigrant populations that remain below the snow line of 500–1200 m. Breeding season extends from mid April to early July.

No records from Eilat.

### House Bunting (*E. striolata*)

In Middle East breeds in Egypt (including Sinai), southern Jordan and Israel, Arabia and Iran. Vagrant in Cyprus.

In Israel this is a quite common local resident in most hilly desert regions. Inhabits highlands and rocky desert areas. Can be observed wherever there is permanent drinking water. The breeding season extends from late March to mid June. Display and song can be seen and heard chiefly between February to April. It has been established that the nominate subspecies breeds in Israel. Most pairs congregate at the end of the breeding season and flocks of up to 30 House Buntings is not an uncommon sight in the Israeli deserts and the Arava valley between June to October.

In Eilat, this is a scarce to uncommon resident, perhaps nomadic, in mountains and urban fringe. Although quite a few observed regularly during winter, only four ringed to date.

### Cinereous Bunting (*E. cineracea*)

This is a species that breeds exclusively in the Middle East and SE Asia Minor. The species appears to winter in Sudan, Arabia and S. Arabia. Migration has been recorded in Arabia, Jordan, Israel and Egypt.

Two subspecies are observed in Israel. Nominate is a rare to scarce migrant, mainly in the spring. The subspecies *semenowi* is rare, mingles with flocks of the nominate subspecies and has to date been reported only in spring.

In Eilat, rare springs passage migrant and accidental in autumn. Just two have been ringed, although flocks of tens are occasionally observed.

**Ortolan Bunting (*E. hortulana*)**

In Middle East breeding summer visitor in Turkey, Iran, Syria, Lebanon and northern Israel. The species is widespread on passage throughout the region.

The Ortolan Bunting winters mainly in sub-Saharan Africa and returns to its breeding grounds in the Levant on a broad front. Israel's northern tip, Mt. Hermon, is considered the southern limit of the species breeding range. In Israel, it is considered an abundant migrant throughout Israel. In autumn, the species migrates from the beginning of August to late December, and the bulk from mid-August to late September. In the spring, they migrate from mid-March to mid-June with the bulk migrating through the region in April. In spring, flocks of tens or hundreds of Ortolan Buntings can be seen staging in the green areas surrounding Israel's southern city of Eilat.

At the IBRCE ringing program at Eilat, in the 15 years of ringing a total of 1775 Ortolan Buntings were caught and ringed. Only 41 (2.3%) were caught in autumn and the majority were ringed in spring ( $N=1734$ , 97.7%). Two hundred eighty seven (16.2%) of the birds were sexed (150 females and 137 males). The species is considered monomorphic and our data substantiates this claim. Males and females had very similar wing chords ( $84.7 \text{ mm} + 4.7$  vs  $84.5 \text{ mm} + 3.4$ )

All of the 39 (2.2%) individuals retrapped in subsequent days (range 1-11 days) within the season were during the spring. The retrapped birds displayed an increase of body mass the longer they staged at Eilat ( $r_2 = 0.48$ ,  $p = 0.026$ ). None of the Ortolan Buntings ringed in Eilat, or Israel, has ever been recovered.

Ortolan Bunting in spring had on average lower body mass than the ones ringed in autumn ( $19.0 \text{ g} \pm 1.9$ ,  $N = 1151$  vs  $22.8 \text{ g} \pm 4.1$ ,  $N = 20$ ). However, unlike many other studies of migratory passerine species, birds in spring ( $87.2 \text{ mm} \pm 3.9$ ,  $N = 1175$ ) had on average a longer wing chord than those ringed in autumn ( $86.9 \text{ mm} \pm 3.0$ ,  $N = 14$ ). The low body mass in spring upon arrival, and increase following staging, stress the importance of their staging at Eilat immediately after accomplishing the crossing of the Sahel, Sahara and Sinai deserts. It appears that Eilat is a relatively important staging area for the species that avail of the eastern, circum-Mediterranean, flyway of the Western Palearctic populations of the Ortolan Bunting.

**Cretzschmar's Bunting (*E. caesia*)**

In Middle East breeding summer visitor in Turkey, Syria, Lebanon, Jordan, south to central Israel and Cyprus. Widespread migrant through the Levant.

In Israel the species breeds only in mountainous Mediterranean/steppe climate habitats. Arrives at breeding grounds from late February to late March. Fledglings disperse mostly during June and July, and the adults mostly in August. The majority of the population breeds between 300 to 1000 m although a few pairs are also found below 300 m and several pairs at altitudes of 1600 m on Mt. Hermon. It is estimated that we have a few thousand of breeding pairs in Israel. Flocks of several tens or hundreds can be seen at drinking spots at the end of the breeding season.

In Eilat, the Cretzschmar's Bunting is a common migrant in spring and rare to scarce in autumn. The spring passage through Eilat is the most compressed of any

### Red-headed Bunting (*E. bruniceps*)

In Middle East is a breeding summer visitor in Iran, and a vagrant in Turkey, Arabia and Israel.

In Israel, the only evidence is that of an adult male photographed in 1979 at Eilat.

### Black-headed Bunting (*E. melanocephala*)

In Middle East breeding summer visitor to Turkey, Iran, Iraq, Syria, Lebanon, Israel and Cyprus.

In Israel, scarce to quite common passage migrant. Breeds predominantly in Mediterranean climate between 400–1650 m a.s.l. Pairs arrive during late April to early May and disperse by late July. Until 1960s hundreds of pairs bred widely in Israel but population decreased significantly chiefly as a result of agricultural and afforestation programs. Since 1970s only some hundreds of breeding pairs remain, mainly in non-agricultural mountainous areas of Mt. Hermon, northern Golan and the Galilee. Post breeding flocks of a few tens to hundreds of juveniles and adults form mainly during first half of July. They concentrate at drinking and feeding spots and at roosts. The largest flock reported to date is of approximately 750 Black-headed Bunting on Mt. Hermon.

In Eilat, uncommon to scarce spring and autumn passage. 73 ringed to date but only 30 sexed. 43 were first year birds. Although described as monotypic in literature, the ringing data at Eilat shows that males (N=12) had longer wing chord (94.3 mm + 3.4 vs 90.4 mm + 3.0) and greater body mass (33.1 mm + 5.7 vs 26.4 mm + 3.4) than females (N=18). The males were also caught two weeks earlier than females (20 Aug. vs 1 Sept). Once again, I defer from inferring any conclusions from these data owing to the small sample size.

In conclusion, the importance of establishing studies that will further our understanding of this little studied and understood family of birds is of the utmost importance. Only our ability to understand their life-cycle, migration ecology and needs, and the environmental pressures exerted on the different species will allow us to try and stem the declines in the breeding areas.

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